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EFFECTS OF ATOMIC RADIATION
ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

SECURITY COUNCIL
Fifty-third year

Letter dated 27 June 1998 from the Permanent Representative of Iraq to the United Nations addressed to the Secretary-General

On instructions from my Government, I have the honour to transmit to you a letter dated 25 June 1998 from Mr. Mohammed Said Al-Sahaf, Minister for Foreign Affairs of the Republic of Iraq, containing a review of the disastrous effects on the environment and people in Iraq resulting from the use by United Kingdom and United States forces of depleted uranium shells during their aggression against Iraq in 1991.

I should be grateful if you would have the present letter and its annex circulated as a document of the Security Council, and of the General Assembly under agenda items 84 (Effects of atomic radiation) and 98 (Environment and sustainable development).

(Signed) Nizar HAMDOON
Ambassador
Permanent Representative

* A/53/50.

Annex

Letter dated 25 June 1998 from the Foreign Minister of Iraq addressed to the Secretary-General

I should like to draw your attention to the letter dated 16 June 1998 from the Permanent Representative of the United Kingdom of Great Britain and Northern Ireland, Mr. John Weston, concerning the use of depleted uranium (DU) by United Kingdom forces during their aggression against Iraq in 1991 (S/1998/517).

Mr. Weston's assertion that United Kingdom tanks fired fewer than 100 DU rounds against Iraqi military forces constitutes yet another official acknowledgement that the United Kingdom Government, which joined with the Coalition States, under the leadership of the United States of America, in launching a war against Iraq, used weaponry that is internationally prohibited under the 1980 United Nations Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May Be Deemed to Be Excessively Injurious or to Have Indiscriminate Effects, because of the suffering and tragedy which such weaponry and ammunition inflict on the civilian population and on combatants alike. The use of such weaponry has no justification other than to demonstrate ill will and a desire for devastation and indiscriminate killing to the point of genocide, which is outlawed by the international community and is an act for which its perpetrators are punished. It also constitutes a flagrant and serious violation of human rights.

The claim made in Mr. Weston's letter that the United Kingdom armoured forces operated at a considerable distance from the centres of population in southern Iraq is simply a desperate attempt which conveys the contempt and scorn shown for international customary laws, charters, agreements and instruments. We should like to refer here to a report, published in the 10 April 1995 edition of Le Monde Diplomatique, which was written by Mr. William M. Arkin, President of the Institute for Science and International Security in Washington. In the report, Mr. Arkin states that 940,000 30-mm shells, each containing 300 grams of DU, were fired from A-10 aircraft, and that 4,000 120-mm shells, each containing one kilogram of DU, were fired from tanks. It can therefore be estimated that a total of approximately 300 tons of DU was dropped on Iraq and Iraqi forces in Kuwait. The newspaper also cites the confidential report submitted by the United Kingdom nuclear authorities to the United Kingdom Government in November 1991, which stated that in places where enough volleys were fired, vehicle and ground contamination exceeded the permitted limits and constituted a hazard to local inhabitants. The report also said that the greatest hazard came from inhaling the fine particles of uranium dust produced when shells hit vehicles and set them alight. When a shell strikes, it added, a high proportion of the metal mass is converted into aerosol, which has particles that are easily airborne. They are also toxic to the kidneys and contain amounts of radiation which are hazardous to the lungs.

We should like to state that the competent Iraqi authorities formed specialist teams from medical and scientific research establishments to conduct medical, scientific and clinical surveys, and examine the effects on human health of the use of radiological weapons by the Coalition forces in the war

against Iraq. Unusual incidences of disease have appeared in Iraq, such as the abnormal increase in leukaemia cases, which are four or five times higher in number than in 1989. Children are affected in 75 per cent of such cases, reinforcing the belief that lymphatic blood cells are affected by radiation. Other diseases on the increase include lung cancer, cancer of the digestive system and skin cancer. There has also been a noticeable increase in congenital diseases and foetal abnormalities, such as babies born with extra limbs, with a distended head or without any head at all, as well as babies born with eye traumas or abnormalities, or with eyes that are completely concealed. Unusual cases of Down's syndrome twins have also emerged, as have bone deformities, genetic syndromes and the presence of abnormal chromosomes. There are also unexplained cases of hair loss and peculiar skin diseases in affected persons or persons who were in the vicinity of the areas shelled. The numbers of people suffering from severe attacks of dizziness, in conjunction with nausea and loss of balance, have also risen. In addition, growing numbers of people are suffering from distorted vision and partial loss of vision that is accompanied by severe headaches. Furthermore, there are unexplained cases of infertility in both sexes, and the number of miscarriages, stillbirths, premature births and difficult deliveries has increased.

I should like to refer to a report (E/CN.4/Sub.2/1997/27) submitted to the forty-ninth session of the Subcommission on Prevention of Discrimination and Protection of Minorities, which took place in 1997. In paragraph 23 of the section containing comments provided by non-governmental organizations, International Educational Development, Inc. states that "DU may cause death and serious illnesses, disabilities and birth defects long after its war-time use in weapons. It remains in the soil, water supply and atmosphere for generations, rendering water supplies and agricultural land unusable. According to United States Government documents, short-term effects of high doses of DU can result in death, while long-term effects of low doses have been implicated in cancer".

The use of such weaponry by the Coalition forces resulted, on the one hand, in the deliberate mass killing of individuals because of the nature of the high-powered destructive fire, and, on the other, in people outside the theatre of war operations being contaminated and afflicted by unprecedented symptoms of disease because of the toxicity of the radioactive material used. Moreover, there is widespread contamination of the environment that is not confined to the areas which were shelled, but extends to include water, soil and air, which in turn has an adverse impact on human and animal health in both the short term and the long term.

Iraq places the international legal and humanitarian responsibility on the States using this weaponry, in particular the United Kingdom and the United States of America, for the serious effects on human health and the environment in Iraq, and for the suffering which will be endured, not only by the present generation, but also by future generations. Iraq therefore reserves its right to seek compensation.

We should be grateful if the present letter and the annexed report could be circulated as a document of the fifty-second session of the General Assembly and of the Security Council.

(Signed) Mohammed Said AL-SAHAF
Minister for Foreign Affairs
of the Republic of Iraq

Appendix

The post-war environment in Iraq: unrelated medical phenomena - cancer, abortion, congenital anomalies, myopathy and neuropathy

A report on the use of depleted uranium weapons

1997

[Original: English]

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Impact of Radiation Weapons on Health

The population in Iraq was exposed to the explosion of thousands of tons of ammunition in the course of military operations of the US led allies. The ammunitions used were so immense and diversified, among which some were used for the first time in the history such as depleted uranium (DU). In addition to the severe direct effects of those weapons on civilians, their use caused a serious pollution of the environment. After many years, the long-term effects started to appear. Theses health effects were studied and the related data were analyzed. These effects include cancer, congenital anomalies, abortion, neuropathy and myopathy. Epidemiological and statistical studies are still being carried out to measure the extent of the immoral and illegal use of these weapons against Iraq. The collected data were tested for their statistical significance to assess their scientific value, and to prove the causal relationship of using DU with the impact on health and environmental pollution.

This report is not but a scientific proof put before the researchers and scientists for their consideration, and to enhance their work in this field in order to uncover the immoral and illegal use of DU by the US. The report, also, gives clear picture of the environmental pollution in Iraq which greatly affected and is still affecting the citizens of Iraq, specially in the bombarded areas. We put this scientific document before the world to reveal the intentions of the US aggression on Iraq. After all, will the claim of the aggressors that what they so call "Second Gulf War" was "clean"?!!!

The research included the following;

1- Field Environmental Studies

A- Many studies were carried out to determine the types of weapons and ammunition used and their impact on people and on environment. Special emphasis was given to the southern areas of Iraq that was subjected to intense bombing in the course of military operations.

B- A study revealed that vast areas in the south are polluted due to the use of radiological weapons. On top of the large

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number of casualties in those areas due to the instantaneous effect of these weapons, unusual diseases were registered later on. Also, many unexploded projectiles were found, among which was DU ammunition. (Fig. -1)

C- Tables 1, 2 and 3 clearly reflect the results of radiological pollution in the southern region, and present the material proof against the claim that the "Gulf War-II" was **clean**. !!!

D- The long-term effects of DU on the environment are still not fully developed. This presents a potential risk with time. This situation imposes the need to further field and specialized studies and research.

TABLE (1) Field Measurements at NORTH RUMAILA AREA

Radiation Exposure (Micro Roentgen/hr)

	Type of chosen sample	Background	chosen sample
1	Armored personal Carrier BMB-1	8.1	24.6
2	Armored personal Carrier MTLB	8.2	9.7
3	T-72 Tank	8.7	15.1
4	Rescue Tank	7.2	13.2

TABLE (2) Field Measurements at SHAMIA AIRFIELD / GUDAIRAT AL- AUDHAIMI AREA

Radiation Exposure (Micro Roentgen/hr)

	Type of chosen sample	Background	chosen sample
1	T-72 Tank	7.0	60.8
2	Armored personal Carrier (Watercan)	7.2-	60.3
3	Far away area from chosen sample (1) / T-72	7.1	7.3
4	Far away area from chosen sample (2) / Watercan	7.3	7.2

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TABLE (3) Field Measurements at DMZ and Surrounding Area

Radiation Exposure (Micro Roentgen/hr)

	Type of chosen sample	Background	chosen sample
1	Unexploded DU Warhead (near Karrange Oil Pumping Station on the Iraqi - Saudi border	7.4	83
2	Tank/T-55 (between cross road Nos 13 and 14)	7.6	21
3	Tank / T- 72 (No. 16107)	7.2	23
4	Tank /T-55 (Left of cross road No.9)	7.4	67
5	Tank/ T-72 (near international observation post between cross roads 12 and 13)	7.6	69
6	Tank/ T- 72 (South West on Mount Sanam)	7.0	65

2- Medical Studies

Many epidemiological and analytical studies were carried out on samples of unusual cases and diseases, and were statistically compared to control groups according to academic and scientific methodology.

2-1 First Study

A- This study dealt with five diseases; cancer, abortion, congenital anomalies, neuropathy and myopathy.

B- The study sample was selected from the cases that occurred for each of these five diseases for each governorate of Iraq.

C- For statistical analysis, a control group for each disease was selected from the same governorate.

D- Being subjected to bombardment or being in the bombarded regions was taken as in indicator in this study.

E- Five forms were carefully designed for this study. These included personal, environmental, social, epidemiological, health history, disease history and exposure to bombardment (place and time) data. The same applies to the control groups.

F- Data were statistically examined and analyzed to find out (Relative Risk), (Odds Ratio) and (Test of Significance).

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G- The total number of forms was (5764). Among those were (1314) abortion, (752) congenital anomalies, (667) cancer, (68) neuropathy and (81) myopathy cases, i.e., totaling (2882) cases. The number of control group was also (2882). (Table-4)

H- The study concluded that their is statistically significant relationship between the exposure to bombardment and the increase in cancer, abortion and congenital anomalies with odds ratios (4.6), (3.2) and (2.8) respectively. (Table- 8)

I- Diyala, Basra, Misan, Muthanna and Thi-Qar Governorates had the highest increase in cancer cases among other governorates. (Table- 5)

J- Nineva, Diyala, Baghdad, Basra, Misan and Najaf Governorates had higher increase of abortion cases. (Table-6)

K- Tamim, Diyala, Baghdad, Basra, Misan, Muthanna and Najaf Governorates had the highest increases in congenital anomalies. (Table-7)

Conclusions

1- The odds ratio in retrospective epidemiological studies had shown substantial deviation towards the exposure to bombardment and its relation to each of the five diseases that were examined in this study. The significance test assures that this relationship can in no way happen by chance.

2- The increase in cases and their geographical distribution among the governorates coincides with the actual bombardment and military operations and their intensity.

3- The cancer cases that had higher increase were leukemia, Lung Cancer, Ca Bronchus, Ca Bladder, Ca Skin, Ca Stomach for males and Ca Breast for females. This goes with WHO publications and the results of international research and studies on the impact of ionizing radiation. The increase in these types of cancers took place within three years after the aggression. Other types of cancer, such as CA Thyroid, needs more time to appear, 10-40 years after the exposure to radiation according to WHO literature.

4- The increases in abortion and congenital anomalies cases are

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considered to be rapid consequences of exposure to radiation. There are other congenital anomalies that continue for three to four generations for parents that were exposed to radiation.

Table -4 Sample and control groups for the five diseases according to governorate of Iraq

	Governorate	Abortion	Congenital Anomalies	Cancer	Neuropathy	Myopathy
1	Baghdad	44	42	16	4	13
2	Ninevah	90	30	39	14	6
3	Basra	42	94	31	28	10
4	Tamim	98	61	112	4	2
5	Misan	96	89	58	0	0
6	Anbar	92	77	54	3	12
7	Salahudin	97	51	39	3	2
8	Thi-Qar	98	76	45	2	6
9	Muthanna	82	15	42	2	7
10	Wasit	96	37	53	4	11
11	Diyala	97	42	44	3	6
12	Babil	90	16	30	0	0
13	Najaf	111	79	43	1	6
14	Kerbala	90	16	30	0	0
15	Qadisia	91	17	31	0	0
	Total	1314	742	667	68	81

Table –5 Registered Cancer Cases in Baghdad and other governorates

	Governorate	1989	1994	Relative Risk
1	Baghdad	4183	6427	1.53
2	Ninevah	1500	1629	1.09
3	Basra	180	461	2.56
4	Tamim	86	114	1.33
5	Misan	37	218	5.89
6	Anbar	51	95	1.86
7	Salahudin	90	94	1.04
8	Thi-Qar	72	489	4.01
9	Muthanna	27	59	3.18
10	Wasit	44	69	1.56
11	Diyala	69	134	2.19
12	Babil	73	166	2.27
13	Najaf	70	126	1.80
14	Kerbala	28	45	1.61
15	Qadisia	53	86	10.62
	Total	6563	10212	

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Table- 6 Abortion Cases in Baghdad and other governorates for the years 1989 and 1994

	Governorate	1989	1994	Relative Risk
1	Baghdad	6281	7729	1.2
2	Ninevah	2364	3440	1.5
3	Basra	2137	3618	1.7
4	Tamim	1458	1826	
5	Misan	1879	3196	1.3
6	Anbar	2351	2622	1.1
7	Salahudin	1611	1507	0.9
8	Thi-Qar	1491	2728	1.8
9	Muthanna	1015	707	0.7
10	Wasit	1234	1882	1.5
11	Diyala	1382	3314	1.4
12	Babil	1219	1724	1.4
13	Najaf	987	2480	2.8
14	Kerbala	1138	2316	2.1
15	Qadisia	1223	2627	2.1
	Total	27770	41716	

Table- 7 Registered Cases of Congenital Anomalies Abortion in Baghdad and other governorates for the years 1989 and 1994

	Governorate	1989	1994	Relative Risk
1	Baghdad	138	294	2.1
2	Ninevah	65	77	1.1
3	Basra	40	117	2.9
4	Tamim	45	122	2.7
5	Misan	41	86	2.1
6	Anbar	34	71	2.1
7	Salahudin	64	68	1.1
8	Thi-Qar	29	32	1.1
9	Muthanna	35	81	2.3
10	Wasit	49	54	1.1
11	Diyala	34	36	1.1
12	Babil	38	44	1.2
13	Najaf	0	1235	
14	Kerbala	25	27	1.1
15	Qadisia	37	42	1.1
	Total	674	2386	

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Table- 8 Odds Ratio of the exposure to bombardment for the study and control groups for the five diseases in Iraq

Cases	Sample size	No. of cases	control	odd ratio
Abortion	1314	988 75%	637 48.7%	3.2
Congenital Anomalies	752	463 61.5%	318 42.2%	2.8
Cancer	667	519 77.8%	224 33.5%	4.6
Neuropathy	68	63 92.6%	58 85.3%	1.7
Myopathy	81	77 95%	73 90%	1.4

2-1 Second Medical Study

Another study was conducted after analyzing available data for cancer, congenital anomalies and abortion cases for some governorates. The study concluded the following;

A- There is a statistically significant relationship (odds ratio=3.85) for the sample group of cancer patients compared to the control group. This proves that there is 'Causal Association' between exposure to bombardment and increase in cancer cases. (Table-9)

B- The study, also, concluded that there is a statistical relationship for the sample group of congenital anomalies cases compared to the control group (Odds Ratio=2.05). Statistically, this is considered to be highly significant, and proves that there is a relationship between exposure to pollution and the cases.

C- The above also applies for the abortion cases where Odds ratio was 2.9.

D- There is a change in the epidemiological pattern for the most prevailing cancer types in Iraq. Leukemia and Non-Hodgkin's Lymphoma became the 2nd and 3rd rank respectively, while rank of Ca Bladder changed after being the 2nd rank for a long period (25 years) next to Ca Bronchus. (Table-12)

E- The incidence rate for age groups (45-50) and (50-55) had

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become the highest after Jan., 1991. Prior to that, the age group (60-65) had the highest cancer incidence in Iraq. (Cancer Registry, 1976-1991, Ministry of Health)

F- New type of cancer cases had emerged. These types were not of did not have importance prior to Jan., 1991. These include Osteo Sarcoma, Teratoma, Nephroblastoma and Rhabdomyosarcoma.

3- Recommendations

A- Some types of cancer cases do not appear until a long period of time elapses after exposure to radiation. WHO, in its publication on exposure to radiation, estimates that period to be 40 years for Ca Thyroid. The same applies for other long term diseases and health problems that do not show until more time passes. This implies continuous monitoring and surveillance.

B- All medical studies recommended that research and studies should be enhanced and continued. They also recommend future prospective studies to be conducted.

4- Summary

In 1991, the environment in Iraq was exposed to the greatest ever damage due to the aggression led by the US. In order to highlight the extent of that damage, this report was presented to the exceptional session of the UN General Assembly on Environment and Development. All friends, international and humanitarian organizations are called upon to join us to overcome the burden of pollution caused by the aggression and the continuation of UN sanctions imposed on Iraq, and hence to put an end to this humanitarian catastrophe. And, simply because the environmental impact is not stopped by political borders, the damage does not affect Iraq only, but it as well, affects all the countries of the region and the global environment.

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Table - 9 Study Group for Cancer Cases vs. Control Group

	study group	control group
Yes	197	286
No	5	28
Total	202	314

Odds Ratio =3.85

Cause: Exposure to Bombardment

Table - 10 Study Group for Congenital Anomalies Cases vs. Control Group

	study group	control group
Yes	41	39
No	6	13
Total	47	52

Odds Ratio =2.05

Cause: Exposure to Bombardment

Table - 11 Study Group for Abortion Cases vs. Control Group

	study group	control group
Yes	24	41
No	3	15
Total	27	56

Odds Ratio =2.9

Cause: Exposure to Bombardment

Table – 12 Percentage of Cancer Types of the study group

Ca Bronchus	16.4%
Leukemia	14.3%
N-lymphoma	13.7%
Ca Larynx	10.6%
Ca Bladder	9.4%
Ca Skin	8.6%
Others [1]	27.0%

[1]Others include Ostetsarcoma, Tertoma, Medull blastoma, Nephroblastoma 3rd Ventricle Tumors, Rhabdomyosarcoma.

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Distribution of Leukemia in the southern provinces/Iraq

1989-1996

Province	1989		1993		1994		1995		1996	
	Total No. of cases*	Leukemia	Total No. of cases*	Leukemia	Total No. of cases*	Leukemia	Total No. of cases*	Leukemia	Total No. of cases*	Leukemia
Wasit	226	5.3%	200	7.0%	203	7.4%	191	7.3%	224	4.9%
Maysan	134	4.5%	129	6.2%	121	5.8%	81	7.4%	118	11.9%
Al-Qadisyah	176	6.8%	225	15.1%	185	13.0%	169	5.9%	145	6.2%
Dhe-Qar	283	4.6%	312	8.7%	274	8.4%	234	7.7%	248	6.9%
Al-Basrah	294	5.4%	294	8.5%	230	6.1%	319	9.1%	286	14.3%
Al-Muthana	104	3.8%	165	10.9%	112	8.0%	111	9.9%	99	5.1%

* Total No. Of different types of Ca. cases